

Survival Analysis of Time to Treatment Resumption for Chronic HIV-1 Patients Interrupting Highly Active Antiretroviral Therapy (HAART)

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Highly active antiretroviral therapy (HAART) has significantly reduced mortality of human immuno-deficiency virus (HIV) disease by enhancing the physiological and immunological ability to counterattack against the Virus and increases the life expectancy. Once started, the antiretroviral treatment should be continued lifelong and adherence to this treatment should be nearly perfect to enable long-term efficacy. A continuous and life-long treatment with HAART may lead to a broad spectrum of significant toxicities. As a result many patients interrupt their HAART without the knowledge and advice of the clinicians and this cause the patient immune to degrade and even cause up to death. Therefore, this study tries to examine the predictive factors of interruption duration in patients who interrupt their HAART drugs.

Data were collected from Zewditu Memorial Hospital medical records of cohort of patients. Patients were selected if they were HIV-1 positive, 18 years of age or older and being placed on HAART and had stopped their treatment at least three months between September 2005 and April 2009. A total of 723 patients were included. A semi-parametric survival data analysis using the Cox proportional hazard model was performed to identify predictive factors.

Of those patients around 33% did not resume back to their therapy. About 55.3% of interrupters were females. The median duration of follow-up for treatment is 256 days and median duration of interruption 377 days, similarly the median CD4 counts of patients interrupting their therapy when enrolled for the first time in the follow up (CD4 at the start of HAART) was 119 cells/ μ l IQR (76 - 178) where as their CD4 prior to interruption was 199 cells/ μ l IQR (121 - 272). From the multivariable Cox model Patients with no education were 1.264 more likely to resume back to their therapy earlier ($P=0.0418$) than those who were educated. Patients with high weight is more likely to resume back to their therapy than those with low weight (HR 1.1861, $P=0.0034$). Similarly, patients with the highest CD4 counts at starting of HAART is more likely to resume back to their therapy than those with low CD4 counts (HR 1.2674, $P=0.0122$). Those patients with longer duration of follow-up resume back to their therapy earlier than those patients who spent short period on therapy (HR 1.1480, $P<0.0001$). However, as patients baseline age increases the less likely to resume back to their therapy (HR 0.8727, $P< 0.010$) and patients characterised with higher CD4 count prior to treatment interruption were less likely to have resumption (HR = 0.7914, $P=0.0009$).

According to the results of the study the main predictive factors for the duration of treatment interruption are more of the biological and clinical variables. So, the clinicians are expected to perform maximum efforts on patient's proper utilization of their medication and this implies drug supply management and future therapeutic strategies of HAART for users should be taken in to consideration to delivery quality services and to promote their well-being.

Key Words: Cox Proportional Hazards Model, CD4 counts, predictive factors, hazard Ratio (HR).